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Differences Among Third Graders' Body Mass Index (Bmi) Levels, Gender, Race, And Number Of Minutes Spent Weekly In Physical Education

Kelly Devine
Eastern Illinois University

DIFFERENCES AMONG THIRD GRADERS' BODY MASS INDEX (BMI) LEVELS, GENDER, RACE, AND NUMBER OF MINUTES SPENT WEEKLY IN PHYSICAL EDUCATION

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Differences Among Third Grader's Body Mass Index (BMI) Levels, Gender, Race, and Number of Minutes Spent Weekly in Physical Education
(TITLE)

BY

Kelly Devine

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DATE

DEPARTMENT/SCHOOL HEAD

11-6-06
DATE

Katherine A O'Rourke
COMMITTEE MEMBER

11-28-06
DATE

COMMITTEE MEMBER

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Kelly Devine

Eastern Illinois University

Lumpkin College of Business and Applied Sciences

October 16, 2006

Abstract

The objective of this study was to examine the relationships among minutes spent in physical education (PE) class weekly, gender, and race with third graders body mass index (BMI). A survey was given to third graders in approved school districts in one county in Illinois. Two hundred sixty surveys were used in this study. The researcher found that the BMI of third grade children who had PE class 40-50 minutes per week was statistically significantly higher as compared to the third grade children who had PE 60-215 minutes per week. It was also concluded that there was no difference seen in BMI between genders. However, among races, Asian children had a statistically significant lower BMI than African American children and the mixed race children had a lower BMI than the African American and Hispanic children. The findings from this study indicate that decreased time spent in PE class can increase a child's risk for obesity in childhood and later in life. PE class in schools can be a vital tool in preventing and treating childhood obesity. More research on children's BMI levels and time spent in PE may be beneficial in persuading educators to allocate resources in daily PE for children.

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Differences Among Third Graders' Body Mass Index (BMI) Levels, Gender, Race, and Number of Minutes Spent Weekly in Physical Education

Chapter 1

Introduction

This study focused on the effects that physical education have on a child's body mass index level (BMI). If a child has a healthy BMI, then that child will have a better chance of lowering his or her risk factors for long term health consequences such as diabetes, hypertension, and hyperlipidemia. If, by participating in physical education classes, the child has a better chance of having a healthy BMI, then there should be more to ensure that children exercise daily. This study examined the differences between the time spent weekly in physical education classes and children's body mass index levels.

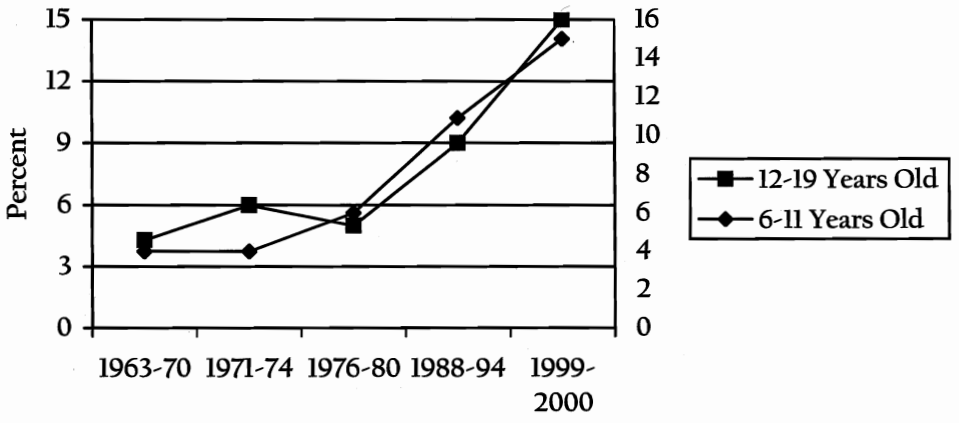
Statement of the Problem

There is a growing trend in today's society of epidemic proportions of children who are overweight. Rates in the United States for overweight children 6-18 years old are 15.8%, as shown in Figure 1 (Childhood Obesity Prevalence, 2002). This number has increased since the CDC 1994 statistics in which 10.9% of children were overweight (Childhood Obesity Prevalence, 2002). One of the reasons for this increase is lack of physical activity in children (Bruus, Morros, & Dannison, 2003). One way a child can remain active is in physical education classes provided in school. But, according to the 2000 CDC's School Health Policies and Programs Study, only 8% of elementary schools provide daily physical education class or its equivalent (150 minutes per week). Of the elementary schools that participated in this study, 16.7% of schools routinely exempted students from required physical education for one or more of the following reasons: high physical competency scores, participation in other school activities, participation in

community sports activities, and participation in community service activities (Center for Disease Control [CDC], 2003). Because so many children in the United States are not getting physical education in their schools daily, studies need to be done to examine if a lack of PE weekly affects a child's BMI.

Figure 1

Percentage of Young People Who Are Overweight in the United States (2000)



Childhood Obesity Prevalence, (2002)

Purpose

The purpose of this study was three-fold. First, it examined if there was a relationship between number of minutes spent in physical education (PE) classes weekly and third graders' body mass index (BMI) levels. Second, the study assessed if differences exist between BMI's of male and female students. Lastly, the study assessed if differences exist between the BMI's of children of varying racial backgrounds.

Hypotheses and Research Questions

Hypotheses

The specific hypotheses for the study were as follows:

Hypothesis 1. Children who spend fewer minutes in physical education weekly will have higher BMI levels compared to the children who are in PE more minutes a week.

Hypothesis 2. Boys will have lower BMI levels than the girls.

Hypothesis 3. There will be a significant difference in BMI levels among the various races: Caucasian or White, African American or Black, Asian, American or Indian or Eskimo Native, Native Hawaiian or other Pacific Islander, Hispanic or Latino and Non- Hispanic or Latino.

Hypothesis 4. African American or Black and Hispanic or Latino children will have a higher BMI than the other racial groups.

Research Questions

The specific research questions for the study are as follows:

1. Will there be a significant difference in the BMI levels of the third grade children who have physical education fewer minutes per week than those who have physical education more minutes a week?
2. Will there be a difference in BMI levels between males and females?
3. Will there be a difference in BMI levels among different races?

Significance of the Study

This study can have a great significance for elementary schools. The data from this study provide useful information for schools applying for financial aid to support the need for daily physical education for their students. More physical education programs

could be started and funded to ensure that more children get the recommended amount of exercise daily. Examples of these programs could be before and after school intramural clubs, more funding for daily physical education programs for equipment, facilities, and staff, and also sports programs within schools. The data could also be useful when schools are creating their school wellness policies as required by the Child Nutrition and WIC Reauthorization Act of 2004 (Model School Wellness Programs, 2005).

This study could be significant for parents and communities, as well. Funding could be used to build more neighborhood parks, sidewalks, and children's exercise programs.

Assumptions

In designing this study, certain assumptions were made. These assumptions included:

1. the average age of third grade children will be between 8-11 years old.
2. if the child is present in school, he or she will be involved and active during physical education class.

Important Terms Defined

The following are important terms that are used in this paper and are defined as follows:

1. Body Mass Index (BMI): body mass index is the measurement of the percentages of fat and muscle mass in the human body, in which weight in kilograms is divided by height in meters and the result is used as a measurement of obesity (American Dietetic Association, 2003).

2. Physical Education (PE): physical education is the time that children spend in school

that allows them to have an organized exercise session taught by a certified instructor.

3. Amount of time spent in PE: time spent is physical education class is measured in minutes per week as shared by a representative from each school.

Chapter 2

Review of Literature

The review of literature examined the current studies, trends, and statistics on children, obesity, and physical education. The review will be subdivided into five sections: childhood obesity; physical activity and education; gender and physical activity; race; physical activity and BMI; and guidelines for quality nutrition programs.

Childhood Obesity

One of the main nutrition concerns currently taking place is the childhood obesity epidemic (Borra, Kelly, Shirreffs, Neville, & Geiger, 2003). The American Dietetic Association, Obesity Summit, the Surgeon General, and the Healthy People 2010 have focused research and education programs on children and obesity (Bruus, et al., 2003; Gray & Smith, 2003; Stahlberg, Miles, & Marcello, 2003).

The report of the International Obesity Task Force to the World Health Organization estimates that about 10% of young people ages 5-17 years are overweight and 2-3% of the 10% are obese (Obesity Reviews, 2004). Currently, about 15.3% of American children ages 6-11 are overweight, which is a 30% increase since 1980 (Childhood Obesity, 2004). Obesity during childhood can be a determinant of obesity later in life. It is estimated that 30% of girls and 10% of boys who were obese as children will be obese as adults, which can lead to many chronic health problems (Mota, Santos, Guerra, Ribeiro, & Duarte, 2002; Southall, Okely, & Steele, 2004). Some of these chronic conditions can start in childhood and progress into adulthood. Examples include type-two diabetes, impaired glucose tolerance, insulin resistance, fatty liver, hypertension, dyslipidemia, hypercholesterolemia, cardiovascular disease, sleep apnea, asthma, orthopedic problems, and cancer (Mota, et al., 2002, Southall, et al., 2004; Felton,

Dowda, Ward, Dishman, Trost, & Saunders, et al., 2002; Sorof, Lai, Tuner, Poffenbarger, & Portman, 2003). The Surgeon General issued a general warning that the obesity epidemic threatens to overtake tobacco use as the leading cause of preventable death (Surgeon General, 2001). Because of these health implications for children in the United States, professionals in fitness, government, health and nutrition organizations across the county are teaming up to find the best way to combat this national epidemic.

A study was conducted in New York City's public elementary schools to investigate obesity among children. A multistage cluster sample was used to measure 2681 students. The nurse at each school measured the selected children's height and weight and calculated each child's BMI. The prevalence of overweight was 43%, with more than half of those being obese. Overall prevalence of obesity was 24%, with at least 20% obesity in each grade including kindergarten (Thorpe, List, Marx, May, Helgerson, & Frieden, 2004).

Some risk factors predisposing children to obesity are sedentary lifestyles, low income level, race, and presentation with elevated blood pressure, heart rate, cardiac output, glucose intolerance and insulin resistance. Other genetic or family related risk factors are familial obesity, family history of obesity-related health risks such as cardiovascular disease, hypercholesterolemia, hypertension and type-two diabetes, and family history of smoking and sedentary behaviors (Sorof, et al., 2003).

A study was conducted involving 1240 boys and 1214 girls between 4-10 years old. The researcher calculated the children's BMI levels and compared them to household income status. The overall overweight or obesity prevalence was 24.6%, while prevalence of obesity alone was 6.1%. Individuals from schools with a high level of low-income families were 65% more likely to be overweight as judged by BMI suggesting that

income status plays a role in childhood obesity (Cecil, Watt, Murrie, Wrieden, Wallis, & Hetherington, et al. 2005).

Many reasons have been postulated for the cause of childhood obesity. The causes include environmental, psychosocial, physical, genetic, metabolic, and lifestyles factors (Southall, et al., 2004). One lifestyle change observed over the past 20 years is decreased levels in physical activity due to decreased participation in school sports and physical education, and increased use of television, computer games, and video/handheld games (Southall, et al., 2004).

A study was done through the Kaiser Family Foundation called Generation M: Media in the Lives of 8-18 Year-olds. The study examined media use among a nationally representative sample of more than 2000 3rd through 12th graders. The participants completed detailed questionnaires and nearly 700 self-selected participants also maintained 7-day media diaries. The study, which measured recreational (non-school) use of TV and videos, music, video games, computers, movies, and print found that the total amount of media content young people are exposed to each day has increased by more than 1 hour over the past 5 years (from 7:29 hours to 8:33 hours), with most of the increase coming from video games (up from 0:26 hours to 0:49 hours) and computers (up from 0:27 hours to 1:02 hours, excluding school-work) (Kaiser Family Foundation, 2005). Sedentary behaviors have also increased because many activities that previously required manual labor have been replaced by evolving technologies (American Academy of Pediatrics, 2004).

Another postulated cause of childhood obesity is increasing caloric intake over time, especially an increase in consumption of high fat foods. This increase has been seen due to the abundance of processed foods that are high in sugar, fat, and sodium

(American Academy of Pediatrics, 2004). Portion sizes in food outlets such as fast food have increased caloric intake in the past 20 years by over 50%. It is reported that one-third of American children eat fast food daily and is estimated that this increases a child's weight by as much as 6 pounds per year (St-Onge, Keller, & Heymsfield, 2003). In addition to an increase in portion size, fast food is also specifically marketed to children using toys, music, and social icons such as popular movie figures (Neilsen & Popkin, 2003).

Additionally, fast food and sugary beverages is now a choice in school cafeterias, replacing healthier, lower caloric food items such as milk, water, fruits, and vegetables. Schools are also given financial incentives to allow vendors and fast food businesses to sell their products in schools (Neilsen & Popkin, 2003).

Physical Activity and Education

One of the lifestyles factors that has influenced the increase in childhood obesity is reduced physical activity. Recent studies have shown that a decline in energy expenditure is one of the major causes of obesity (Childhood Obesity, 2004; Datar & Sturm, 2004; Felton, et al., 2002; Mota, et al., 2002; Sahota, Rudolf, Dixey, Hill, Barth, & Cade, 2004).

A survey that supports the fact that youth in America have declining physical activity levels is the Youth Behavior Risk Surveillance Survey that was conducted by the CDC from February to May in 1999. The survey monitored six high priority categories of youth behavior, including physical inactivity. It was concluded that fewer than two-thirds of youth reported participating in vigorous physical activity 3 or more days a week (Kann & Williams, 1999).

A study was conducted by the CDC which used physical activity and health

surveys to examine how active children and adolescents aged 12-21 are in the United States. Results concluded that only 50% of young people in the U.S. participate regularly in vigorous physical activity and 25% reported no participation in vigorous physical activity (CDC, 2003). In another CDC study, the YMC Longitudinal Survey (YMCLS), it was reported that 61.5% of children aged 9-13 years do not participate in any organized physical activity during their nonschool hours. Further results revealed that during their non-school time 22.6% of children ages 9-13 years did not engage in any free-time physical activity (Centers for Disease Control and Prevention [CDCP], 1997).

Children are advised to get 30-60 minutes of activity most days of the week according to the Fitness Pyramid for Healthy Kids (Kids Activity Pyramid, 1999), the Fitness Pyramid for Healthy Kids which is published through the United States Department of Agriculture (2005) and the American Academy of Pediatrics (2006). One of the ways children can get 30-60 minutes of physical activity is their schools' physical education class (Datar & Sturm, 2004). The Task Force on Community Preventative Service, in one of its five interventions, strongly recommends that school-based physical education is a way in which children can increase their physical activity levels (CDC, 2003). In Healthy People 2010, the Surgeon General identified that schools can be a prominent site for implementing programs for the prevention of obesity (US Department of Health and Human Services, 2000). More than 95% of children ages 5-17 years old are enrolled in school, making schools the ideal setting for physical activity interventions (CDC, 2003). Also, the Guidelines for Childhood Obesity Prevention Programs, created by the weight realities division of the Society for Nutrition Education, were recently published. Section four of the guidelines pertains to school policies. One of the guidelines is to have physical education or recess on a daily basis and to provide a variety

of activities so that every child has the opportunity to discover activities that he or she can succeed in and enjoy (CDC, 2003).

A school program aimed at preventing childhood obesity in schools is CARE. CARE stands for Communication with communities and families about the prevention of obesity, taking Action to implement interventions for the prevention of obesity, and conducting Research and providing Education to help prevent obesity. This program gives educators and people in the community a chance to collaborate and fight childhood obesity (Wenos, Konin, & Wenos, 2002).

Physical education has long been promoted as a way in which to keep children fit and healthy. The Center for Disease Control (CDC) recommends that schools require daily physical education and health education in kindergarten through grade 12. Furthermore, the CDC recommends that schools and community organizations provide adequate funding, equipment, and supervision for programs that meet the needs and interests of all its students (CDCP, 1997). Several of the organizations and professions that are promoting more physical education in schools include the National Association for Sport and Physical Education, American Academy of Pediatrics, American Heart Association, American College of Sports Medicine, Centers for Disease Control and Prevention, and the U.S. Department of Health and Human Services (Levin, McKenzie, Hussey, Kelder, & Lytle, 2004). But most schools in the United States do not have physical education class every day. In the CDC's 2000 School Health Policies and Programs Study, it was reported that only 8% of elementary schools provide daily physical education for its students.

In a study conducted to assess how much of physical education class is actually devoted to exercising, it was reported that elementary schools were only active 36% of

the class time (US Department of Health and Human Services, 2000). This is not enough time to be an effective means of combating obesity. A Healthy People 2010 objective is to increase the amount of time that children spend exercising in physical education class to at least 50% of class time.

In a study by the Child and Adolescent Trial for Cardiovascular Health, researchers looked at the variation in physical activity during physical education among different grades. Third grade students in 20 non-intervention schools were studied. In the 20 schools, 97 lessons of third grade physical education were observed by researchers. The average time spent in physical education class was 33 minutes and 43.2% of that time was spent in moderate-to-vigorous physical activity or vigorous activity. The results of this study did not meet the recommendation that children be physically active at least 50% of their scheduled PE time (Levin, et al., 2001).

A study was conducted on the effect of physical training in obese children. Seventy-four obese children, aged 7-11 (boys, n=25; girls, n=49) were randomly assigned to either the control group or physical training group. The physical training group exercised 5 days a week for 40 minutes for 4 months. Each child was measured for body fat and fat free mass before and after the intervention. In the physical training group, their fat free mass significantly increased and their percent body fat significantly decreased. This study supports that overweight children can benefit from daily exercise and improved total body composition and cardiovascular fitness (Riggs, Ferguson, Litaker, & Thompson, 1999).

Schools have the health education professionals and facilities to create programs to combat the increase in childhood obesity (Felton, et al., 2002; Sahota, et al., 2001). However, there has not been a nationwide study on the frequency and time requirements

for physical education class and their effect on children's body mass index levels (Datar & Sturm, 2004). There is one study that was completed by Datar and Sturm (2004) that assessed the effects of increased physical education time as it related to BMI. The study, conducted through the National Center for Educational Statistics, focused on a cohort of children, of varying BMI's from more than 1,000 schools who entered kindergarten in the 1998-1999 school year. Thirty-seven percent of these children experienced an increase in physical education time weekly from kindergarten to first grade. With this increase, the girls experienced on average a 0.31 decrease in their body mass index. This supports the idea that the more time spent in physical education will help lower children's body mass index levels (Datar & Sturm, 2004).

Gender and Physical Activity

Physical activity and body mass index also vary by gender. Many studies have shown that boys are more active than girls. A study investigating activity levels of 157 children, ages 8-15 years old (boys, n=64; girls, n=93), found that the boys were significantly more engaged in moderate-to-vigorous activities than were girls. This was tested by having each child wear a Computer Science Applications activity monitor for 3 consecutive school days. The study also reported that girls who were overweight were significantly less active than their non-obese counterparts. This suggests that "the obesity in girls can be linked to lower levels of activity" (Mota, et al., 2002).

The European Youth Heart Study focused on gender and physical activity with children ages 9 and 15 years old (n=2185). Results concluded that in the 9 year old children, boys were 18% more active than the girls and the 15 year old children, boys were 20% more active than the girls (Riddoch, Anderson, Wedderkopp, Harro, Klasson-Heggebo, & Sardinha, et al., 2004). This supports the research that boys are

more physically active than girls.

Race, Physical Activity, and Body Mass Index

BMI can also vary by race. In three polls conducted through the Center for Disease Control and Health, it was reported than that 13.5 % of Caucasian children aged 6-11 were overweight, compared against 19.8% for African American children, and 21.8% for Mexican American children (CDC, 2003).

In a study conducted through the University of South Carolina, researchers recruited 2,000 middle schools girls (51% African American and 49% Caucasian) from 31 public middle schools. The researchers looked at physical and behavioral factors of the two groups. It was found that the African American girls were less active than Caucasian girls, both for vigorous and moderate-to-vigorous physical activity. Results also found that the African American girls had greater BMI's and greater prevalence of overweight (Felton, et al., 2002).

Another study was done with school aged children in eight Houston public schools. Height and weight were recorded for 5,102 children. Overweight prevalence was 20% which varied significantly by race. The racial groups that were most overweight were Hispanics (22%) and African Americans (15%). Results supported the fact that these two minority groups tend to be more overweight than Caucasian and Asian children (Sorof, et al., 2003).

In the New York City Elementary Study cited earlier, overweight and obesity among race were also measured. Hispanic children (31%), and African American children (23%) had significantly higher levels of overweight and obesity than Caucasian children (16%) or Asian children (14.4%). These results mirror the national trends (Thorpe, et al., 2004).

Race was a key factor in the Baton Rouge Children's Study. The purpose of this study was to determine the relationship between race, sex, and total daily energy expenditure (TDEE). One hundred and fourteen Caucasian and African American boys and girls who were stratified as obese or lean were tested 2 years after an initial study had taken place. Total daily energy expenditure (TDEE) and resting metabolic rate (RMR) were obtained. The Caucasian children had significantly higher TDEE and RMR than the African American children. The African-American children also had more fat free mass but also a higher body mass index (DeLany, Bray, Harsha, & Volaufova, 2004).

Guidelines for Quality Nutrition Programs

The *Journal of Nutrition and Behavior* and the *Journal of the American Dietetic Association* have published guidelines on quality nutrition programs for children. *Journal of Nutrition and Behavior* encourages a health-centered, not a weight-centered approach. The emphasis is on healthy eating, active living, and creating a nurturing environment. There are four main sections in their recommendations: (a) framework for addressing childhood obesity prevention, (b) setting appropriate goals, (c) special considerations in avoiding harm, and (d) setting school policies.

The recommendation under the first section, framework for addressing childhood obesity prevention, is to pool together decision-making groups in the community to actively address obesity prevention in children. These individuals would be registered dietitians, eating disorder specialists, doctors, teachers, and the general public. The second recommendation is to provide programs that promote healthy living at home, school, and in the community (Guidelines for Childhood Obesity Prevention Programs, 2005).

The second section, setting appropriate goals, recommends that children set goals for themselves to achieve a healthier lifestyle. Some of these goals could be physical activity, healthy eating, goals for health, not weight, and for a nurturing environment. The third section, special considerations in avoiding harm, addresses issues that professionals should avoid when working with children. Some of these issues are to foster self-worth in children and respect of their bodies. Another consideration when trying to avoid harm is appropriate weighing and measuring techniques so that the child avoids embarrassment.

The third is interventions. This means that nutrition programs should include the entire family, rather than only the children who are overweight (Guidelines for Childhood Obesity Prevention Programs, 2005).

The fourth section of the guidelines for childhood obesity prevention programs is school policy. Schools are advised to make a positive eating environment for their children with healthy options and enough time to eat their lunches. Physical activity is also addressed here. Schools should allow more time for active play. Another recommendation is for schools to teach respect and acceptance for one's own body and to be sensitive to the children who may be overweight or obese (Guidelines for Childhood Obesity Prevention Programs, 2005).

In the *Journal of the American Dietetic Association*, childhood obesity programs were also addressed. The executive summary from the Institute of Medicine (IOM) was released by the IOM Committee on Prevention of Obesity in Children and Youth. This summary gives ten specific guidelines on how to combat the increase in obese children in the United States. The executive summary focuses on government, schools, communities, advertising and marketing agencies, parents, doctors, and clinicians. These

guidelines can be effective if all the parties and agencies mentioned assist in preventing and decreasing childhood obesity (Committee on Prevention of Obesity in Children and Youth, 2005).

Recent legislation that has gone into effect is the Child Nutrition and WIC Reauthorization Act of 2004. The U.S. Congress established a new requirement that all school districts with a federally-funded school meals program develop and implement wellness policies that address nutrition and physical activity by the start of the 2006-2007 school year. These wellness policies must include goals for nutrition education, physical activity, and other school based activities that are designed to promote student wellness. The wellness policies were set in motion to establish healthy school nutrition programs, to help reduce the risk of childhood obesity and to reduce the risk of obesity-related chronic health diseases (Model School Wellness Programs, 2005).

Summary

Childhood obesity and overweight is affecting millions of American children today. Some of the postulated causes of the increase in childhood obesity are decreased activity over time, increased consumption of high calorie foods and most importantly the lack of physical education in schools. Physical activity and especially physical education in schools are important components of efforts taken place to reverse the effects of increased obesity in children.

Physical activity and BMI were also studied to examine if there are differences in BMI between genders and between races. Research has shown that boys are more active than girls suggesting that boys have a lower BMI than girls. Studies have also been done on children of varying race. Results from these studies conclude that African American and Hispanic/Latino children typically have higher BMI's than Caucasian and Asian

children.

Guidelines and policies are being initiated to decrease the incline in childhood obesity in the United States. One of these guidelines is to increase physical activity daily through PE class in schools.

Chapter 3

Method

The methods of the study are detailed below. These methods include the design of the study, participants, instrumentation, data collection and analysis tools, and information on the researcher's pilot study.

Design of the Study

The research design for this study was a quantitative study of third graders in one county in Illinois with a population of 5.3 million according to the Illinois census report (US Census Bureau, 2000). This study examined the differences among the following variables: BMI and weekly time spent in PE; BMI and race; and BMI and gender.

Sample

The sample for this study included 81 school districts in a northern county in Illinois. While all 81 school districts were invited to participate, 27 schools from 8 school districts agreed to participate. A total of 1160 surveys were sent out to the 27 schools with 8 schools returning 286 surveys. Response rate was 17.8%. Twenty six of the surveys were incomplete thus the sample for this study was 260 third grade children. Gender and race were determined after the sample had been surveyed.

The sample in this study was a convenience sample for two reasons. First the researcher was from this geographic location. Second the researcher had access to contacts within the county's school system in the numerous school districts.

The sample was also a purposive sample. The county that was purposefully chosen has a wider diversity of race and income level compared to other Illinois counties. The age of the children were also chosen purposefully. Third grade children were chosen for this sample to eliminate other factors, such as puberty, and competitive sports.

In an effort to provide a description of the city or town of each school, census data were collected. Information on four of the eight schools was available. These data are found in Table 1.

Data Collection Instrument

A survey was selected as the best tool for this study because of its ability to reach a large number of students in a short time frame. Also, as stated by numerous school officials, schools are more likely to allow a survey to be given to the children rather than having a researcher come to each school and taking each child's height and weight.

Survey. A survey was given to the children in the third grade of the participating schools in one county in Illinois (see Appendix A). The survey was sent home and filled out by a parent or legal guardian and returned to school.

Questions in the survey inquired about height, weight, gender, race, and age. Parents/legal guardians were asked to record their child's height and weight. The BMI level was calculated by Statistical Package for Social Sciences (SPSS) for Windows Version 14.0.

Parents/legal guardians were asked to mark which race best described their child. The options, taken from a sample CDC study, were Caucasian or White, African American or Black, American Indian or Eskimo Native, Native Hawaiian or other Pacific Islander, Hispanic or Latino, and Non-Hispanic or Latino (Center for Disease Control, 2003). Only one term for each racial group will be used in the rest of this study. A question was asked regarding the child's ability to participate in physical education class. If the child could not participate, the parents/legal guardians were asked to document which condition(s) prevented the child from participating in physical education. No surveys were excluded due to a child not being able to participate in PE.

Age was asked to determine if the child was between the ages of 8 and 11 years old (average age of third grade child).

Table 1

Description of Participating Schools/Towns in Study

	Median Income	Population Size	% Caucasian	% African American	% American Indian and Alaskan Native	% Asian	% Native Hawaiian and other Pacific Islander	% Hispanic or Latino
City/Town A	$31,958	29,367	10	79.6	0.3	0.4	0.1	12.8
City/Town B	$60,073	28,051	90.4	3.6	0.2	2.7	-	5.9
City/Town C	$38,625	2,000,000	42	36.8	0.4	4.3	0.1	26
City/Town D	$57,370	63,633	68.9	4.5	0.2	21.3	-	5.7

Source: U.S. Census Bureau, 2000

Validity and Reliability. The survey was piloted prior to the study to test for validity and reliability. The survey used in the pilot study was given to fourth grade parents in two sample schools to test reliability of the survey. All surveys were filled out accurately and yielded similar results, which resulted in no questions being changed. The survey was also reviewed by the researcher's thesis committee at Eastern Illinois University to establish content validity.

Introductory letter and consent form. An introductory letter (see Appendix B) was mailed along with the consent forms, instructions (see Appendix D and E) and survey. This letter was meant to introduce the researcher and to invite the children and their parents/legal guardian to take part in the study. The letter was placed on top of the

consent form to explain the study in simple details and provide instructions on returning the survey to the teacher along with the signed informed consent form.

Teacher/Secretary Form. This form (see Appendix C) was filled out by one of the third grade teachers or the school secretary in each participating school. The form has two questions:

1. How many days a week on average does the third grade children in your children in your school have physical education (PE) class?

2. How long on average does each physical education class last (in minutes)?

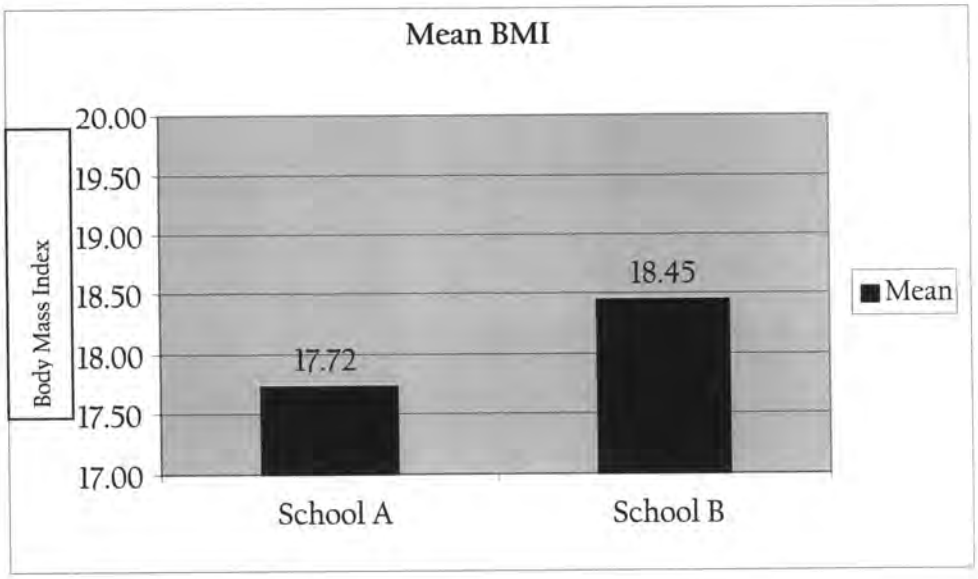
For the study's data to be accurate, information on the number of minutes each school had physical education weekly was needed.

Pilot Study

A pilot study was conducted during a Research Methods class in the Fall 2004 semester at Eastern Illinois University. Two schools were used in this study. School A had physical education 3 days per week and School B had physical education 1 day per week. The heights and weights of the children were used to calculate BMI. The height and weights for school A were collected by measuring each individual child with a stadiometer and scale. The height and weight of children in School B were self-reported by the parents in a survey. The average BMI for School A (PE 3 days per week) was 17.72 compared to 18.45 for School B (PE 1 day per week) as shown in the graph in Figure 2. The children had lower BMI's in the school that had physical education more times a week.

Figure 2

Comparison between BMI and Time Spent in PE (Pilot Study)



Procedure for Data Collection

After IRB approval was obtained through Eastern Illinois University, file number 05-029, the researcher called each elementary public school district in the selected county in Illinois, inviting the elementary schools in that district to participate in this study. Upon confirmation of participation, the introduction letter, consent forms, instructions, and surveys were mailed to each individual school for distribution to all third graders. The letter introduced the researcher and the study, and invited each child and his or her parent/legal guardian to participate in the study (see Appendix B). The instructions, consent forms, and surveys were distributed in class by the teacher and sent home to the child's parent/ legal guardian. If they chose to participate, the parents/ legal guardians were given 1 week to complete the survey and consent form, and return them to their child's teacher. The consent forms, surveys, along with the

teacher/secretary form, were mailed back to the researcher in a paid self-addressed envelope. The surveys were then split into four groups: schools that provided weekly PE for (a) 40-50 minutes; (b) 60-70 minutes; (c) 90-100 minutes; and (d) 150-215 minutes. No follow-up attempt was made due time constraints and at least one survey being returned from each participating school.

Data Analysis

The statistics used in this study were descriptive and inferential. The data collected in this study were height, weight, (which were used to calculate each child's BMI), race, gender, and amount of time spent in PE class weekly. All data were entered into SPSS Version 14.0. Data were analyzed to examine if differences exist between number of minutes spent in PE weekly and BMI; gender and BMI; and race and BMI. A significance level was set at $\alpha \leq .05$.

The descriptive statistic used in this study was the mean (M). The mean was calculated and used to measure the average BMI for female and male children, the average BMI in each exercise group and the average BMI of each racial group. The inferential tests were the *t*-test, ANOVA, and Duncan test. The *t*-test was used to examine the difference in the mean BMI's between genders in research question two. The ANOVA test was used to examine if differences existed among the groups tested. In question one, the ANOVA test examined if differences existed among the four PE groups, and, in question three, the ANOVA was used to examine if differences exists among races. The Duncan test was used in the study because of the (a) large variation in sample size between each of the groups and (b) to test the specific differences among the groups tested (R. Wilkinson, personal communication, June 20, 2006). In question one, the Duncan test examined the specific differences among PE groups and, in question three,

the test examined the differences between races.

Summary

The study was a quantitative study that examined the differences between BMI and time spent in PE weekly; BMI and gender; and BMI and race in 260 third grade children in a northern county in Illinois. Surveys, consent forms, and instructions were sent out to 27 schools within eight approved school districts. Surveys were given to the third grade children to take home and be filled out by their parents(s) or legal guardians and were then returned back to their teacher. After 2 weeks, surveys were mailed back to the researcher. Surveys were grouped according to how many minutes per week the children participated in PE. The data were then analyzed using SPSS Version 14.0.

Chapter 4

Results and Discussion

The purpose of this study was to examine the differences between number of minutes spent in PE weekly and third graders' BMI levels, and the differences between gender, race and BMI. The surveys were put into four groups according to how many minutes per week each school participated in PE class. Each child's BMI was calculated from the child's self-reported height and weight. All groups' BMI and minutes of weekly exercise were compared to examine if there were differences between the amount of time spent in PE and BMI.

Description of the Sample

The number of participants in this study totaled 260. Gender, race, and age were provided by the parents/legal guardians via the survey. Males comprised 47.3% of the study (n= 123), and females 52.7% (n= 137). Race varied among the participants; 70.4% were Caucasian (n= 183), 18.5% were Hispanic (n= 48), 6.9% were African American (n= 18), 3.5% were Asian (n= 9), and 0.8% were mixed ethnicity (n= 2). Ages ranged between 8 and 11 years old. The sample from this study is comparable to the 2000 census data in the participating county in Table 2 (General Demographic Profile, 2000).

The participants were divided into four groups dependent upon the minutes spent in PE class each week. The groups ranged from least amount of weekly exercise to most amount of weekly exercise. The first group, 40-50 minutes exercise weekly, had 34 participants (13.1%). The second group, 60-70 minutes exercise weekly, had 61 participants (23.5%). The third group, 90-100 minutes exercise weekly, had 101 participants (38.8%). The fourth group, 150-215 minutes exercise weekly, had 64 participants (24.6%).

Table 2

Demographic Information of Participating County as Compared to the Sample

	County (%)	Sample (%)
Caucasian	56.3	70.4
African American	26.1	6.9
Asian	4.8	3.5
American Indian	0.3	0
Pacific Islander	0.1	0
Hispanic or Latino	12.8	18.5
Females	51.6	52.7
Males	48.4	47.3

Source: US Census Bureau, 2000

Research Questions

Research question one: Will there be a significant difference in BMI in the third grade children who have physical education fewer minutes per week than those who have physical education more minutes a week? The statistics revealed a statistically significant difference in BMI among exercise level groups. Specifically, the ANOVA test indicated that there was a significant difference ($F = .593$, $p = .001$) between the exercise groups: (a) 40-50 minutes PE weekly, (b) 60-70 minutes PE weekly, (c) 90-100 minutes PE weekly, and (d) 150-215 minutes PE weekly. The results are presented in Table 3.

Table 3

Differences between BMI and Minutes of Physical Education Weekly – ANOVA

	F	P value
Between Groups	5.923	.001*

* p is significant at the .05 level

The Duncan test was then used to determine how the PE groups were different. The Duncan test indicated that the group that participated the least, 40-50 minutes of PE per week, had a higher BMI (M = 20.27) than the other three groups who participated in PE between 60-215 minutes per week (M = 17.09-18.29). The results are presented in Table 4.

Table 4

Differences between Mean BMI and Minutes of Physical Education Weekly - Duncan test

PE Group		Subset for alpha = .05	
	n	1	2
60-70 Minutes of Exercise	61	17.9190	
90-100 Minutes of Exercise	101	17.0914	
150-215 Minutes of Exercise	64	18.2984	
40-50 Minutes of Exercise	34		20.2735*

Note. Means in each column are statistically the same.

* The mean in column two is statistically significantly higher than the means in column one (R. Wilkinson, personal communication, June 20, 2006).

These data are supported by research that the more time children spend doing physical activity, the lower their weight. Lower weight correlates with a lower BMI

and/or healthier body composition (Riggs, et al., 1999; Datar & Sturm., 2004). In a study on obese children by Riggs, et al. (1999), it was found that increased physical activity increased the children's lean mass and decreased their fat mass leading to a healthier body composition. It was also concluded that an increase in time spent in PE class correlated to an average decrease in BMI by 0.31 in the girls studied. These studies help support the data that increased time spent in PE exercising is related to healthier children's bodies.

Research question two: Will there be a difference in BMI between males and females? There was not a statistically significant difference between the BMI's of male and female children t (258) = .924, p = .356. The results are presented in Table 5. Males in the study had an average BMI of 18.2 compared to 17.8 for females.

Table 5

Differences between BMI and Gender - t-test

Gender	n	Mean	P-Value
Male	123	18.2392	.356
Female	137	17.7830	

* p is significant at the .05 level

The t-test indicates no significant difference between the average BMI of male and female children. This finding is in opposition with current research that concludes males are more physically active than girls, which correlates to a lower BMI (Mota, et al., 2002; Riddoch, et al., 2004). In one study investigating activity levels among genders, it was found that boys were more engaged in moderate-to-vigorous activities than the girls of the same age group. The same study also concluded that girls who were overweight were significantly not as active as their non-obese counterparts (Mota, et al., 2002). In a

study done by Riddoch, et al. (2004), results concluded that, in 9 year old children who were studied, boys were 21% more active.

Research question three: Will there be a difference in BMI among different races? There was a significant difference in BMI among various races as confirmed by the ANOVA test ($F = 4.02$, $p = .004$). Results are presented in Table 6. The Duncan test was then used to examine the differences between the racial groups' BMI's.

Table 6

Differences between BMI and Race – ANOVA

	F	P value
Between Groups	4.023	.004*

* p is significant at the .05 level

Two conclusions were confirmed from the Duncan test: (a) the students of mixed race had a significantly lower BMI ($M = 13.95$) than both Hispanic/Latino children ($M = 18.75$) and African American children ($M = 20.65$), and (b) Asian students had a significantly lower BMI ($M = 15.93$) than African American children ($M = 20.65$). The results are presented in Table 7.

The results that indicated Asians have a lower average BMI than African American children support the published research findings that Asian children typically have lower BMI's than African American and Hispanic children (Thorpe, et al., 2004). Two studies cited earlier support this claim. In studies conducted by Felton, et al. (2002) and Sorof, et al. (2003) it was reported that African American and Hispanic children have a higher incidence of overweight than Caucasian and Asian children.

Table 7

Differences between Mean BMI and Race – Duncan test

Race	n	1	2	3
Mixed	2	13.9450*		
Asian	9	15.9333	15.9333**	
Caucasian	183	17.6864	17.6864	17.6864
Hispanic	48		18.7535	18.7535
African American	18			20.6456

Note. Means in each grouping are statistically the same.

* The mixed race had a statistically significantly lower BMI than both the Hispanic and African American groups due to the fact that the Hispanic and African American mean BMI's were not placed in column 1. Because Hispanic and African American BMI's were not placed in column 1, the mean BMI's were significantly different.

** The Asian race had a statistically significantly lower BMI than the African American race due to the fact that the African American mean BMI was not placed in group 2 (R. Wilkinson, personal communication, June 20, 2006). Because the African American mean BMI was not placed in column 2, the mean BMI was significantly different.

The group that had the highest BMI (M =20.65), was the African American group, followed by the Hispanic/Latino group (M = 18.75), Caucasian group (M = 17.69), Asian group (M = 15.93), and the mixed racial group (M = 13.95). (In the case where the parent/legal guardian selected more than one race, they were placed into a mixed race category). Although the differences among African American, Hispanics/Latino and Caucasian children are not statistically significant, the average BMI for each group supports the research that African American and Hispanics/Latinos typically have higher BMI's than Caucasian children (CDC, 2003; DeLany, et al., 2004).

Hypothesis

The hypotheses for the study are discussed below:

Hypothesis 1. *The children who spend fewer minutes in physical education weekly will have higher BMI levels compared to the children who are in PE more hours a week.* The data support this hypothesis that children who spend fewer minutes in PE weekly have higher BMI levels than children who have PE more minutes per week, thus the hypothesis was accepted. The children who had PE 40-50 minutes per week had a statistically significantly higher BMI, ($F = .592$, $p = .001$) than the children who had PE 2 or more days per week.

Hypothesis 2. *The boys will have lower BMI levels than girls.* This hypothesis was rejected. There was not a statistically significant difference in BMI's, ($t(258) = .924$, $p = .356$), between male and female children.

Hypothesis 3. *There will be a significant difference in BMI levels among the various races: Caucasian or White, African American or Black, Asian, American or Indian or Eskimo Native, Native Hawaiian or other Pacific Islander, Hispanic or Latino and Non- Hispanic or Latino.* This hypothesis was accepted. There was a statistically significant difference in the mean BMI in race, ($F = 4.023$, $p = .004$).

Hypothesis 4. *African American or Black and Hispanic or Latino children will have a higher BMI than the other racial groups.* This hypothesis was rejected as African American and Hispanic groups did not have a statistically significant higher BMI's than all of the other races. While the African American racial group had a higher BMI than the Caucasian and Asian group and the Hispanic group had a higher BMI than the Asian group, none of the differences were statistically significant.

Summary

In conclusion, the data support that children who have the least amount of exercise, 40-50 minutes per week, have a significantly higher BMI than children that have PE 60-215 minutes per week. The data also concluded that there is no significant difference in mean BMI in male and female children. Last, the data concluded that the mixed race children have a statistically significant lower BMI's than African American children and Hispanic children and that Asian children have a statistically significant lower BMI's than African American children.

Chapter 5

Summary, Limitations, Conclusions and Implications

Summary

The purpose of the study was three-fold. First, it examined if there were differences between the number of minutes spent in physical education (PE) weekly and third graders body mass index (BMI) levels. Second, the study also observed if differences exist between the BMI's of male and female students. Lastly, the study examined if there were differences among the BMI of various races.

The results of this study could be helpful for school professionals who are seeking information on the benefits of exercise for children's health. The results could also be helpful for communities and parents who are looking to create more opportunities for their children to play and exercise.

Surveys and consent forms were mailed to 27 schools within eight elementary school districts in a northern county in Illinois. The surveys and consent forms were distributed in third grade classes in each participating school. The children were instructed to take the survey and signed consent form home have it completed by a parent/legal guardian, and return the survey and consent form to his/her teacher. After 2 weeks, the surveys from each school were mailed back to the researcher. The total numbers of surveys sent back were 286. One thousand one hundred and sixty surveys were mailed to the approved schools, yielding a response of 17.8%. Two hundred sixty surveys (91%), were used in the study due to unanswered questions (i.e. no height and weight reported). The participants were ages 8-11 years old (M= 8.72 years). The mean height for this study was 53 inches and the mean weight was 72.34 pounds.

The survey used in this study consisted of six items: the child's age, weight (lbs.),

height (inches), gender, race, and any condition that prevented the child from participating in PE class. None of the responses to the survey indicated any condition that prevented the child from participating in PE; thus, no surveys were excluded. The categories of race were White or Caucasian, Black or African American, Asian, American Indian or Eskimo Native, Native Hawaiian or other Pacific Islander, Hispanic or Latino, and Non-Hispanic or Latino. If a parent/legal guardian marked more than one category, then the child was placed in an eighth category labeled mixed race.

Once the surveys were returned to the researcher, they were sorted according to how many minutes per week the students had PE class. The following groups were developed: (a) 40-50 minutes per week, (b) 60-70 minutes, (c) 90-100 minutes, and (d) 150-215 minutes. Each group's data were entered into SPSS and analyzed to examine if there were differences between BMI and time spent in PE, BMI and gender, and BMI and race.

In conclusion, there was a statistically significant difference in BMI in the third grade children who had PE class 40-50 minutes per week compared with 60 to 215 minutes per week. The children whose school had PE 40-50 minutes per week had a statistically significantly higher BMI than children who had PE 60 to 215 minutes per week. There was no significant difference in BMI between male and female children. Among races, the mixed race children had a lower BMI than African American and Hispanic/Latino children and Asian children had a lower BMI than the African American children.

Limitations

The main limitation of this study was the sample size. Many school districts (about 80% of schools contacted) did not want their students' height and weights to be

reported in this study, which limited the sample size.

A second limitation to the study was the self-reported heights and weights of the children. Since the children's weight and height needed to be reported, many different types of scales could have been used or outdated information from the children's last physical examination could have been reported. Another limitation to the self-reported height and weight was that the children themselves could have filled out the survey, possibly making the information less accurate.

Conclusions

Four conclusions about the differences in BMI and physical activity, gender and race could be drawn from this study:

1. The less time children spend in PE weekly, the more likely their BMI will be higher. This conclusion supports current published research that overweight children have a significantly lower level of physical activity (Southall, et, al., 2004). Another study published results that found obese girls had lower levels of activity than their non obese counterparts suggesting that higher levels of activities are linked with lower BMI's (Mota, et al., 2002).

2. There is no difference in BMI between male and female children. This conclusion contradicts current research. A published study found that boys were significantly more engaged in physical activity than girls, leading to lower average BMI's (Mota, et al., 2002).

3. Children of mixed race have a lower BMI than African American and Hispanic children. This finding supports current research. In a study that examined BMI and race, it was concluded that the racial groups that were most overweight were Hispanics and African Americans (Sorof, et al., 2003).

4. Asian children have a lower average BMI than do African American children. This result supports published literature that concluded African American children had higher BMI's and a greater prevalence of overweight as compared with other racial groups (Felton, et al., 2002). In another study that measured BMI and race, it was concluded that Caucasian and Asian children had lower levels of obesity as compared to Hispanic and African American children (Thorpe, et al., 2004).

Implications

The data from this study could support researchers in further studies and professionals who work with school officials. These possible implications are detailed below.

Implications for further research. Future research on children's BMI's and the relationship to time spent in physical activity may be beneficial in persuading educators to put resources into daily physical education for children. Future research should include more diverse sample sizes to help account for any variances in the data. Samples should include a wider variety of income levels as income plays an important part in the health and well being of children. Research studies should also include a more diverse sample racially to represent the whole population in the region being studied. Inclusion of more age groups will help increase sample size and give a wider range of ages.

Implications for schools and dietitians. Data from this study could help dietitians that are working with elementary school districts in trying to promote a healthier school environment for children. Dietitians could also use this information to help increase funding in schools and communities to promote health, nutrition, and exercise. By having research substantiate the benefits of PE in elementary schools, the schools could use the results to request funding for PE teachers salaries, exercise equipment, and other

necessities needed to expand PE programs. Individual schools can use the data from this study to create better physical activity guidelines in their individual school wellness policies that are now required by the new Child Nutrition and WIC Reauthorization Act of 2004 (Model School Wellness Programs, 2005).

Implications for policy makers. Results from this study could also be used when setting policies and guidelines for physical education in elementary schools. If policy makers realized the benefits of additional time spent in PE class, they could establish standards for schools nationwide to have mandatory PE class 5 days a week. This would affect the children's long-term health by reducing the growing threat of childhood obesity and the long-term ill effects that obesity causes.

Implications for parents. Parents can be a driving force behind policies that are set for their child's schools. If parents realize that more PE is beneficial to their children, parents may request more PE funding from their towns, cities, education grants, and each schools Parents Teacher Association (PTA). If parents/ legal guardians realize the potential benefits of exercise for children, they may also start promoting healthy lifestyles at home by increasing physical activity.

In summary, the results from this study can help aid schools, dietitians, policy makers, parents, and researchers to help lobby and acquire funding for more PE programs in schools. More PE programs in schools can help ensure that children are receiving the recommended amount of daily physical activity as recommended by the My Pyramid for Kids, (United States Department of Agriculture, 2005), and the American Academy of Pediatrics (2006). More research needs to be conducted with larger and more diverse sample sizes to help support the ongoing research.

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Appendix A

Physical Education Survey

Purpose of Study: To compare third grade children's body mass index and number of hours spent in physical education weekly.

Directions: Together with your child, fill out the survey and return to his or her teacher. For your child's height, have child face forward standing tall with heels against the wall in their bare feet Measure along wall with a tape measure. When you weigh your child, have child wear minimal clothing and no shoes or jewelry. Thank you!

1. Child's Age: _____ years old

2. Child's Weight _____ pounds

3. Child's Height _____ inches

4. Child's Gender: _____Male _____Female

5. Child's Race: _____ White or Caucasian

_____ Black or African American

_____ Asian

_____ American Indian or Eskimo Native

_____ Native Hawaiian or other Pacific Islander

_____ Hispanic or Latino

_____ Non-Hispanic or Latino

5 a. Does your child have any medical conditions that prevent him or her from exercising every day? _____Yes _____No

5 b. If yes, what are the condition(s) that prevent exercise?

_____

_____

Thank you for participating!

Appendix B

Introductory Letter

Hello, my name is Kelly Devine and I am master's student at Eastern Illinois University. I am inviting you and your child to participate in my thesis study. This study will be looking at children's body mass index levels (calculated from your child's height and weight) and how it relates to how many days of Physical Education (PE) they have in a week. So in other words, do children who are offered PE 5 times a week have healthier BMI's than children who are offered PE only 1 or 2 days a week? That is what I am trying to prove in this study.

I ask that you read through the consent form, have you and your child sign and date it, and fill out the attached survey. Both the consent form and survey can be turned back to your child's teacher in 1 week.

Please note that your child's name and school will never be revealed or addressed in the paper that I will write. The subjects in my paper will only be labeled as third graders in one of the top ten largest counties in Illinois. Also note that there is no penalty from not participating.

I hope you will consider taking a part in my study. Thank you for your time!

Sincerely,

Kelly Devine

Appendix C

Teacher/Secretary Form

Directions: This form is to be filled out by **one** third grader teacher or the school secretary.

1. How many days a week on average does the third grade children in your school have physical education (PE) class? _____ Days

2. How long on average does each physical education class last (in minutes)? _____ Minutes

Appendix D

Consent Form

Title of Investigation: Relationships Among Third Graders' Body Mass Index (BMI) Levels, Gender, Race, and Number of Minutes Spent Weekly in Physical Education.
Name of Principal Investigator: Kelly Devine
IRB File Number: 05-029

You and your child are invited to participate in a research study comparing children's weight and the number of hours spent in physical education weekly. Kelly Devine, a graduate student at Eastern Illinois University, will be conducting this study. The purpose of the study will be to compare children's body mass index levels (calculated from your child's weight and height) to the amount of time they spend in physical education weekly. The study will also compare your child's body mass index to their gender and ethnicity.
You and your child's participation in this study is minimal. It will take approximately from 1-5 minutes for the legal guardian to complete this survey. Both you and your child's signature are needed on the consent form for him or her to participate. The child then needs to turn the survey back in to his/her teacher.

Participation in this study is voluntary. Your decision regarding participation will not negatively affect you or your child. In addition, you and your child can withdraw from the study at any time without penalty. There are no foreseeable benefits or risks for participating in this study

Confidentiality will be kept at all times. The survey and consent form will be stored in a locked box in the researcher's office. Information in this study may be used in scientific journals or presented at scientific meetings, but any information which could identify your child will be kept strictly confidential. Since names will not be on any of these forms except the consent form, your child's name will never be revealed.

You and your child's signature are needed on this form to ensure that you have read through the informed consent and that you allow your child's information to be used in this study.

Any questions about this study can be addressed to the Institutional Review Board at Eastern Illinois University

Institutional Review Board
Eastern Illinois University
600 Lincoln Ave.
Charleston, IL 61920
Telephone: (217) 581-8576

If you have any additional questions concerning the purposes pr the procedures associated with this research project, I may write or email:

Kelly Devine
1613 Marion St.
Charleston, IL 61920
Email: krashkd44@aol.com

Dr. Karla Kennedy Hagan
Eastern Illinois University
600 Lincoln Ave
1439 Klehm Hall Charleston IL 61920
Phone: 217-581-6353

** Please retain this form for your records

Appendix E

Informed Consent

The research project and my child's role in the research have been fully explained to me through the consent form.

I understand that I am free to decline to answer any questions on the survey without penalty.

I understand that all data collected from the survey will remain confidential with regard to my identity and that of my child's.

I understand that there are no risks and benefits in this study.

I understand that participation in this study is voluntary and not a requirement or condition for being recipient of benefits or services from Eastern Illinois University.

I understand that the approximate length for participation is between 1-5 minutes long.

I understand that if I decline to continue participating in this research project, neither my child or myself will be penalized

I agree that my child, _____, will be allowed to participate in this research study and I acknowledge that I have received a copy of this consent form.

_____ _____

Guardian Signature Date

_____ _____

Child (Minor) Signature (Witness by guardian) Date